THE MOTOR AGE

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DEFENSE ASSOCIATION FINALLY FORMED

The meeting of manufacturers of gasolene driven motor vehicles and of motors for automobiles, which was called for the purpose of forming an association to fight the Selden patent, owned by the Electric Vehicle Co., took place at the Iroquois Hotel, Buffalo, August 2.

The preliminary session was called to order at 10:30 a. m. with twenty odd manufacturers of vehicles and motors in attendance. A committee on credentials was elected at once and passed on the credentials of all present. One representative of an electric concern was "excused" and the meeting was confined to gasolene people exclusively

After a two-and-a-half-hour discussion of the merits of the Selden patent and the necessity of an association, a committee on organization was appointed and the meeting adjourned till 4 o'clock.

At that time the members reassembled and passed on the report of the committee in short order, adopting it in its en-

tirety. The committee made nominations for officers and the nominees were all unanimously elected, as follows:

President, Elmer Apperson, of the Haynes & Apperson Co., Kokomo, Ind.

Secretary, George H. Brown, of the Winton Motor Carriage Co., Cleveland, O.

Treasurer, John F. Harper, of the Colonial National Bank, Cleveland, O.

Executive Committee, E. B. Gallaher, of the Keystone Motor Co., Philadelphia, Pa; H. M. Sternburgh, of the Duryea Power Co., Reading, Pa.; A. Snyder, of the Buffalo Gasolene Motor Co., Buffalo, N. Y.; John S. Clarke, of the Autocar Co., Ardmore, Pa.; and the President, Secretary, and Treasurer.

The "Hydrocarbon Motor-Vehicle Manufacturers' Association" was the name selected for the organization.

After the election of officers all those present attached the signatures of their firms to the articles of agreement which had been adopted. In addition to the membership secured at the first meeting, a large addition is expected from firms who wrote pledging themselves to abide by any action that might be taken by the meeting.

By five o'clock the work was completed and the meeting adjourned subject to the call of the executive committee. Further information, the meeting decided, it would be undesirable to give out at the present time. It may be stated, however, that every manufacturer present appeared to be thoroughly in earnest in his opposition to the Electric Vehicle Co.'s attempt to monopolize the business and determined to stand by the Winton and Buffalo companies in their fight and these two companies, on their part, pledged themselves to make no compromise in the pending litigation.

WINTON'S APPEARANCE MADE

New York, Aug. 6.—Appearance was made in the United States Circuit Court to-day on behalf of the Winton company in the suit brought by the Electric Vehicle Co. on the Selden patent.

IMPROVED DURYEA THREE-WHEELER

Charles E. Duryea has perhaps paid more attention to the development of the three-wheeled motor carriage than any other automobile-builder in this country. The accompanying half-tone illustration presents the latest product of the Duryea Power Co. of Reading, Pa. Being a three-wheeled phaeton and entirely different in appearance and construction from the ordinary motor tricycle, it is distinctive and unique.

The Duryea phaeton weighs 650 pounds and is strongly built. It has three-inch tires and thirty-six inch wheels, one and one-quarter inch spokes, large axle extending through both rear wheels, heavy driving chain of self-oiling pattern and powerful foot brake, which is said to act with sufficient force to slide the wheels in either direction.

The steering is effected by a single lever pivoted to the front edge of the seat, controlling the steering wheel without lost motion. The motor throttle and clutch shifters are operated by the same handle. Being between the riders, this handle may be manipulated by either rider at will. A large proportion of the weight is on the driving wheels, insuring effective traction and easy steering.

The few mechanical parts are all enclosed within the body, so that as a carriage there is nothing unsightly, but by lifting the seat the machinery is exposed for inspection and repair. The sloping dash deflects the air downward, rendering fast riding less unpleasant than in some vehicles.

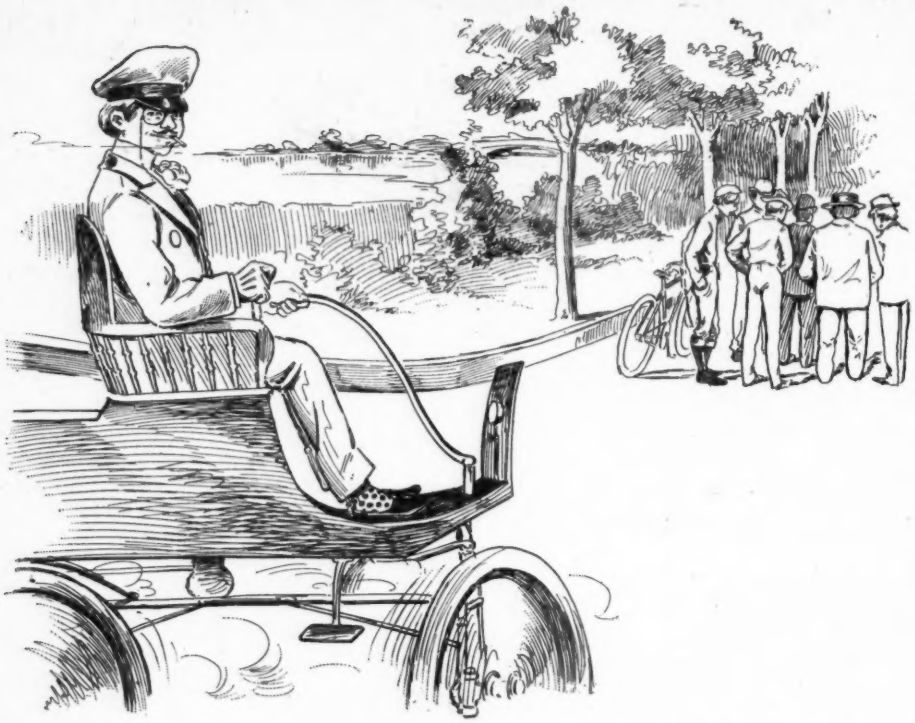
Side curtains and storm aprons make the vehicle rain-proof for doctors' use or

touring, while the large tires and extra long springs insure very comfortable riding. The regular triple cylinder motor with magneto ignition and compact hill-climbing gear is used, but all ordinary speeds are effected without the use of gears, simply by throttling the motor. The three-wheeler is recommended by the Duryea company as being the simplest, best and most serviceable machine, but four-wheelers are supplied if desired.

A single turn of the starting crank produces a spark from the dynamo, after which no further attention is needed. All bearings are self-oiling except the motor-pistons, which have large oil cups so that very little attention is required. A single supply of fuel will run 100 miles, and speeds as high as fifty miles per hour are attainable, states the maker, who also avers that the vehicle is noiseless, odorless and practically free from vibration. There are no pumps or similar nuisances to give trouble. The price of this motor is $1,500.

LATEST PATTERN OF DURYEA GASOLENE PHAETON.

THE MISTAKE OF WILLIE RECKLESS



WILLIE RECKLESS—"Wonder what those idiots are blocking the road for? I'll wait till I get right to them before I sound my gong, and give them a taste of high life."

—And he did.

INDEX

"YALE IMPROVED" GASOLENE MOTOR 2

DESCRIPTION OF THE TWO-CYCLE GASOLENE ENGINE MANUFACTURED BY THE DENISON ELECTRICAL ENGINEERING CO.

The Denison Electrical Engineering Co. of New Haven, Conn., spent a long time in experimenting on a two-cycle gasolene engine, suitable to automobile construction. Their experimental work was ended some time ago, since which time they have been marketing their engines, under the name of the "Yale Improved." The results of their experiences have been so satisfactory that the company have decided to push the engine vigorously.

In construction, the engine is decidedly novel, in several particulars. Fig. 1 shows a perspective view of the engine, with the flywheel removed, the valve openings being indicated by dotted lines. Fig. 2 shows a sectional view of the engine from the rear and Fig. 3 the same from the side.

Referring to Fig. 1, the tank of gasolene is shown at 1, fitted with the plug 2, having a small air vent and the cock 3. The gasolene is raised by the pump 4, actuated by the eccentric 5, on the motor-shaft 6, through the pipes 7 and past the check valves 8, to the receptacle 9, where it is maintained at a constant level by the overflow pipe 0. From this receptacle 9, it is drawn through the valve 11, by the suction of the engine, being mixed with air which enters at the opening 12, and is mixed with a further supply of air which enters through and is regulated by the valve 13. It then passes through the pipe 14, and through the valve opening 15, to the interior of the crank-shaft casing 16. The pipe 17 connects with the cooling water supply tank and is circulated by the pump 18, actuated by the eccentric 5, on the motor-shaft 6, the check valves 19 assisting. The cooling water overflow pipe is shown at 20.

The battery 21, switch 22, and the spark coil 23, are diagramatically represented.

Loosely mounted upon the crank-shaft 6 (see Figs. 2 and 3), is the disc 24, which, however, is made to rotate with the crank-shaft by the pin 25, in the counter balance 26. This disc 24, or "rotary valve plate," is a feature which is covered by patents owned by the Denison company. A glance at Fig. 2 will show that the valve opening 15 is uncovered by the disc 24, just after the piston begins its compression stroke, tending to form a vacuum in the enclosed crank-case. This tendency causes the explosive mixture to be drawn into the crank-case. By the time the compression stroke is completed, the disc 24 covers the valve opening 15, and the forward motion of the piston compresses the mixture in the crank-case.

The disc 24 also governs a valve opening 27 in the crank-case 16, which opening leads to the pipe 28, which has the opening 29, in the explosion chamber 30. The disc 24 uncovers the valve opening 27, just at the completion of the explosive stroke of the piston. At the same time the piston uncovers the opening 29, and the explosive mixture, already under compression in the crank-case, passes through the opening 27, pipe 28, and the opening 29, into the explosion chamber 30, being deflected by the deflector 31, from passing directly to the exhaust opening 32, which is directly opposite the inlet opening 29. This deflector 31 causes the fresh explosive mixture to rush up towards the head of the cylinder, driving out the products of combustion.

As the piston begins its upward stroke it closes both the openings 29 and 32, and the charge is compressed.

In the illustration the cranks are indicated by 33, the piston rod by 34, the piston by 35 and the spark plug by 36. The sparking mechanism is of the make-and-break variety, with an instantane-

ous snap motion, which is worked from the outside of the cylinder by a simple connection (not shown) which is actuated by the eccentric 5, which also operates the pumps 4 and 16. The timing

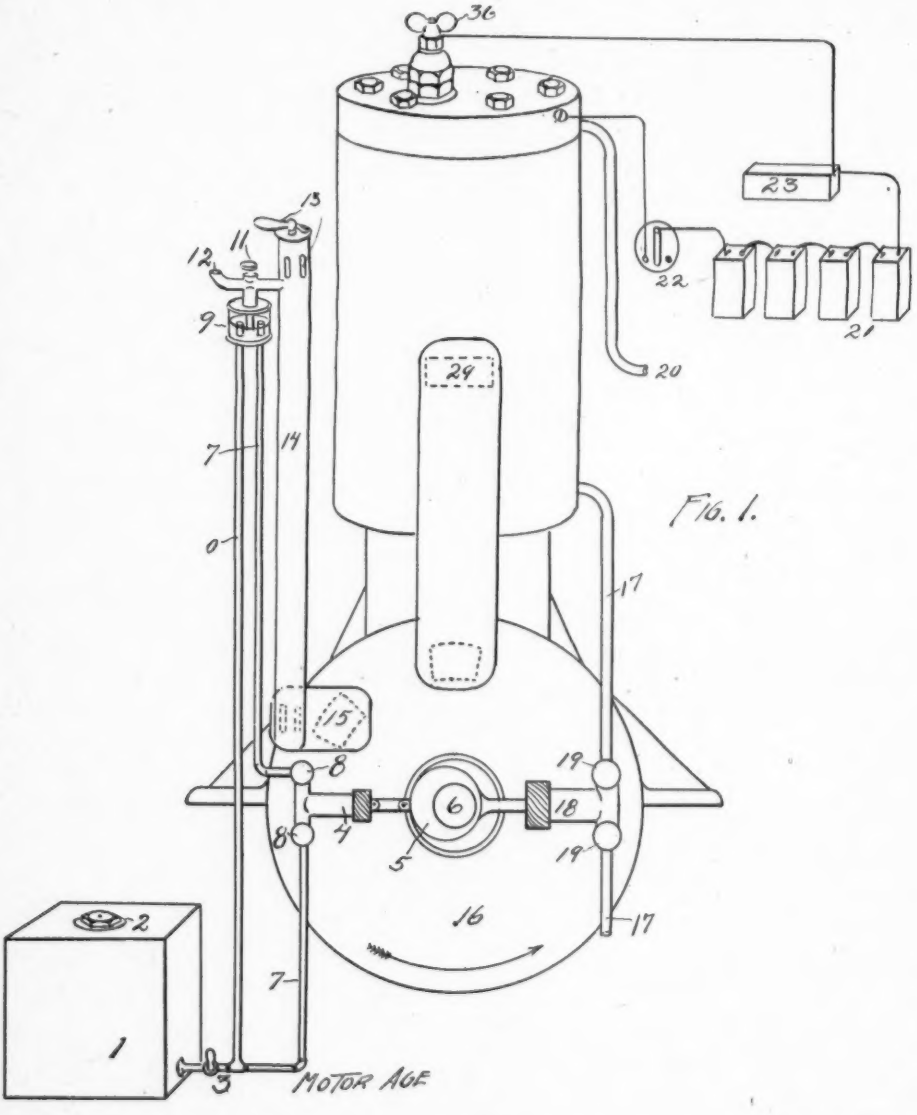


FIG. 1.

of the spark can be regulated to a nicety while the engine is running.

In addition to the above, the company also fit the engines with two and four-speed devices.

The engines are made as follows:

Single cylinder, 4¾-inch bore by six-inch stroke, 3½ horsepower, $172.50; additional for two-speed, $69; for four-speed, $97.75.

Double cylinder, four-inch bore by 4½-inch stroke, four horsepower, $218.50; additional for two-speed, $74.75; for four-speed, $103.50.

Double cylinder, 4¾-inch bore by six-inch stroke, 7½ horsepower, $276; additional for two-speed, $86.25; for four-speed, $120.75.

Triple cylinder, 4¾-inch bore by six-

inch stroke, twelve horsepower, $402.50; additional for two-speed, $103.50; for four-speed, $143.75.

These prices include spark coil, batteries, muffler and vaporizer. Besides the engines and speed gears, the company are also prepared to furnish substantial rear axles, fitted with differential gears, as well as the complete material for running gears.

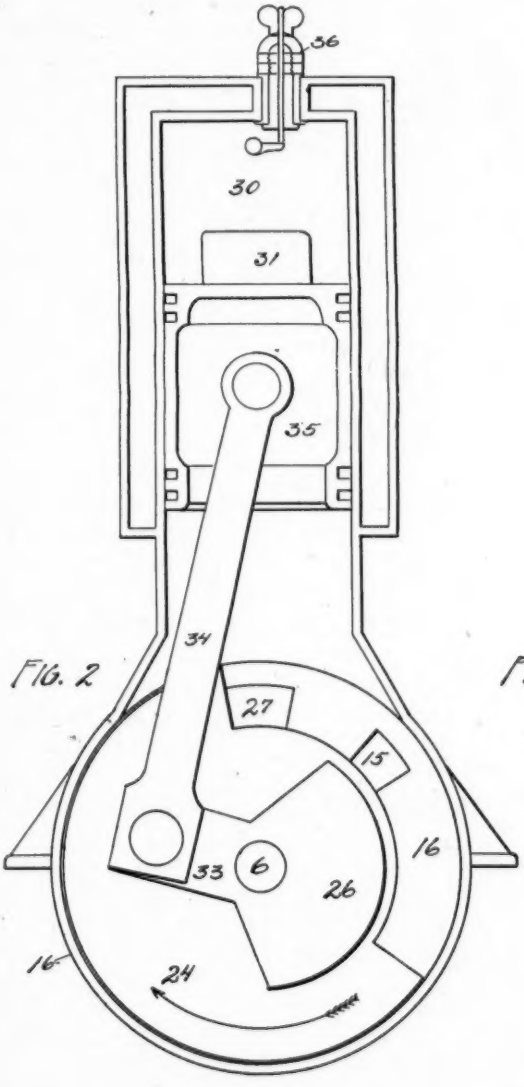


FIG. 2

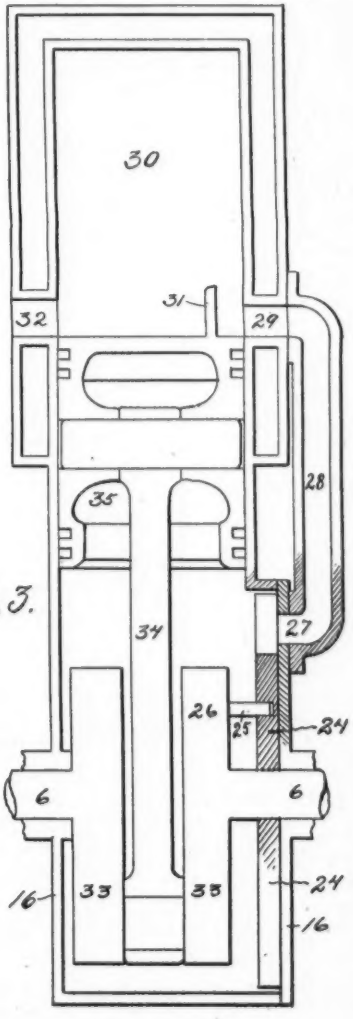


FIG. 3.

In speaking of their two-cycle engines the company say, in regard to weight and other features:

"The reasons that our engines are heavier than some types (although not heavier than all by any means) are owing (1) to the fact that we build them in a very substantial and durable manner and use sufficient stock in the crankshafts and other parts, so that there is no liability of breakage, (2) because we develop our full power at a speed under no circumstances to exceed 500 revolutions per minute; while it is customary, in the average type of motor vehicle engines on the market to drive them at

speeds ranging from 300 to 2,000 revolutions a minute in order to obtain their full power. This results in excessive wear and tear, noise and vibration. Of course the lower speed at which we operate calls for and demands greater cylinder areas; furthermore, we use in our engine a comparatively low compression, which still further reduces the vibration. We provide flywheels somewhat in excess of the requirements because we find that this makes a wider range of speed variation possible and adds to the smooth running, but, if wished, these weights could be cut down somewhat. Our engine will be found to be compact per horsepower developed, particularly in the larger sizes. (3) While it is not perhaps generally known, for scientific reasons it is impossible to run a two-cycle engine as rapidly as it is possible to run a four-cycle engine, but there is a great gain in favor of the two-cycle engine owing to the fact that an impulse is received on every down-stroke, whether running at light or full load, which holds all the moving parts in absolute contact, so that, no matter how much the bearings wear, lost motion will make no trouble and will not result in the engine pounding or giving trouble. One can run these engines right along with the bearings very loose, while, in a four-cycle engine, they could not be run at all. In a four-cycle type of engine, where every other time there is no pressure on the top of the piston, it results in all the moving parts jumping away from the bearings and viciously pounding, also setting up in the engine, carriage or boat, a bad synchronic vibration which is not found in the two-cycle type of engine. (4) Our engine being provided with a water-jacket also adds somewhat to its weight over that of light high speed engines which have no water-jackets, but an engine in which no other method of cooling the working parts is provided than that of radiating ribs will not prove a durable mechanism, notwithstanding the fact that the advocates of radiating rib-cooling engines make strong claims to the contrary."

The company are prepared to furnish blue prints and technical descriptions of the different engines at a nominal price. They have prepared a cardboard model of the single-cylinder engine, which is both unique and attractive.

MOTOR GOSSIP FROM THE SOUTH

In Florida the motor vehicle has not yet come to take the place of the horse in an antagonistic sense; far from it. Of course, it is not to be expected with such a recent invention. The business element of the state, however—and it is the same all over the country—is eagerly waiting for a reduction in the price of the motor before purchasing; and when this object is accomplished, horse propulsion will indeed have become a thing of the past. Another reason why the motor is slow in "catching on" in the South was given to the writer recently by a prominent business man. Said he: "The majority of those I find engaged in business and having use for a motor, agree that the horse costs less to keep at present than a motor would, owing to the fact that the latter, yet in its embryo state, is liable to frequent breakdowns and consequently would run up a bill for repairs, which, at the end of the year, would in all probability be in excess of the amount necessary for the maintenance of a horse. Of course, it must be remembered that horseflesh can be bought and kept for almost nothing in the south, consequently the noble steed will remain the chief source of propulsion here until the motor has been brought very near to perfection and its cost reduced."

There are, nevertheless, numerous

large retail grocery houses and dry goods establishments in the principal cities of Florida employing half a dozen delivery wagons with a pair of horses to each, when two motors could easily accomplish the work of the whole and at far less trouble and expense. With such people, however, it is merely a lack of enterprise or misguided practical economy. The advantages of the horseless vehicle have yet to be demonstrated to them, particularly its money and time saving powers. Where is the motor agent?

Although it may be doubted, it is nevertheless a fact that the funeral director in the South is the only individual engaged in a dead business whom one never hears complaining of "hard times;" he is always prosperous. The head of one of the principal undertaking establishments in the city of Jacksonville, Fla., rides to and from his office each day in an automobile, besides being the owner of an elegant naphtha launch in which he "sports" on the silvery waters of the St. Johns River for his own pleasure and those who have the honor of his acquaintance. Visitors to Florida naturally wonder how it is that its undertakers are so highly prosperous. The explanation is simple: Every year hundreds of invalids flock from all parts of the United States in a vain endeavor to regain lost health through the influence of its balmy and invigorating climate. The majority of these people are well-to-do, and can therefore afford every luxury. Money, however, it not a panacea, and many of the healthseekers never return home alive, as statistics prove. And it is owing to this fact that the undertaker reaps a profitable yearly harvest, for on the death of a wealthy sojourner he receives the order, in most cases either to embalm or cremate the body; an expensive coffin is made and everything in the way of et ceteras is furnished, preparatory to shipping it to its future (earthly) destination, regardless of cost. For embalming, Mr. Undertaker charges from $300 to $800, and most of the work, he says, is clear profit. One undertaking establishment in Jacksonville did a business last year to the tune of $45,000!

The head of the aforementioned firm has informed the writer that he intends adding a motor hearse and carriages to his business next year if things continue to prosper. Good! Everybody will then want to die in order to try it.

In connection with the introduction of the motor hearse, many people have the impression that in taking a body to its last resting place in such a conveyance all respect for the dead would be lost. Such talk, of course, is absurd and emanates only from those provided with a superabundance of sentiment and conservative ideas.

To see a horseless funeral winding its noiseless way along the dusty highways would be a decided change from the weird and melancholy appearance which the present black-plumed hearse, horses and lumbering coaches, carry with them in their procession to the grave.

To the man in the street a motor car, palpitating and shivering with internal convulsions by the wayside, is apt to create an unfavorable impresssion, but the car appears at its worst when thus nominally at rest. It is when it is fully under way, with a clear road and fair surface that the exhilarating pleasure of what the automobile clubite calls motoring begins to be appreciated, and compared with the motor's eager, irresistible rush, the methodical progress of the horse-drawn vehicle is tame and humdrum. With all its apparent imperfections, motoring has already developed sufficient charms to attract many men and women of all classes and conditions, who speak with enthusiasm of the genuine pleasure to be derived from touring with a serviceable and well-equipped motor. In addition to those who have actually fallen under the spell, there is a much larger company outside waiting, as they say, for the perfect motor or for the reduction of prices.

WEEKLY PATENT OFFICE BUDGET

INVENTION COVERING ENTIRE CONSTRUCTION OF TRANSMISSION, REVERSING AND BRAKING GEAR SUPPLEMENTS SEVERAL MEDIOCRE PATENTS—FANS FOR COOLING MOTOR

The week's grist of automobile patents comprises a mixture of kernel and bran. Henry John Lawson, well known as an English company promoter and as having been associated with Pennington, is allowed a patent for a simple fan arrangement whereby explosive motors may be air cooled. Hosea Libbey of Boston, who has been brought to notice previously on account of several fantastic inventions, receives two more patents of little merit.

The most notable patent in the batch is one of which E. P. Cowles is patentee. Mr. Cowles has carefully worked out a complete driving and regulating device particularly adapted to supplement explosive engine drive. The principal features of his patent are described below. Two patents for rubber vehicle tires end this week's list.

The complete specifications, claims and drawings of any patents will be furnished by the patent office at Washington for five cents each. Persons sending for patents should address their letters "Commissioner of Patents, Washington, D. C.," and should enclose five cents for each copy of each patent desired, and should state the numbers and dates of the patents. Each patent described in The Motor Age is preceded by its number and date. The date of any patent described in earlier issues, in which dates were not given, can be ascertained by deducting nine days from the date of the paper in which it was described.

COWLE'S DRIVING GEAR

Letters patent No. 654,716, dated July 31, 1900, to Edward P. Cowles, Warren, O.; driving, reversing and braking mechanism.

This transmission gear comprises a frictional drive and is especially adapted for use in connection with explosive motors requiring the speed change to be made in the driving gear.

The rear axle is divided and the inner adjacent ends supported by a yoke within which is revolubly mounted a flat steel disk, A, about 18 inches in diameter. This disk is secured to a differential the ends of whose stub shafts bear spur pinions meshing with gears on the inner ends of the drive wheel shafts.

Engaging frictionally with opposite sides of the disk, B B, are two driven friction rollers preferably having fiber surfaces and with their points of contact opposite so that the pressure of one balances that of the other. The friction rollers, B, turn on stubs extending from angular blocks, C, their axes being preferably parallel with the surface of the disk. Extending from the other arm of the roller block, C, at right angles to the disk, A, and with its center line passing through the point of contact of roller and disk, is a stud or pivot, D, which serves to connect the friction roller to the lower arm of a substantially vertical lever, E. The oscillation of the roller block on the pivot, D, is governed by an arm, F, which is connected to a link, G, running forwardly to the vehicle operating mechanism.

The levers, E, are pivoted between the arms of a yoke, H, extending down on both sides of the driving disk from a hub which slides freely on a horizontal bar attached at the rear end to the drive-wheel axle yoke and supported at the forward end by a frame brace. The upper ends of the levers are connected by links to eccentrics, J, having their centers on opposite sides of their common axis. A square rod, K, running forwardly from the hub of the eccentrics, connects with the vehicle governing mechanism so that by turning the eccentric toggle joint the levers, E, may be

made to turn on their pivots and thus cause the friction rollers, B, to "bite" or to relax their hold on the driving disk, A.

It is obvious that when the friction rollers are engaging the disk it would require great power to slide them to and from its center; but when their plane of revolution is shifted slightly from direct right angular position they will traverse automatically toward the center of the disk, following a spiral curve indicated by a dotted line in Fig. 1. When the plane of revolution is shifted in the opposite direction they will travel toward the periphery of the disk in the same manner.

A slight applied force will thus cause the friction wheels, even when under their greatest load, to traverse back and forth from center to circumference of the disk and vice versa, changing the speed of the driving wheels as desired.

As the friction rollers travel to and from the center of the disk they force the levers, E, and yoke, H, along with them, the sleeve of the yoke being free to slide along the horizontal frame bar and the hub of the eccentrics to slide on the square rod, K, by which they are governed.

The friction rollers are driven directly from the motor by means of extensible rods, L, connected at both ends by flexible or universal joints. It is necessary that these drive rods, L, be telescopic in order that they may extend and shorten in accordance with the changing positions of the friction rollers on the surface of the driving disk.

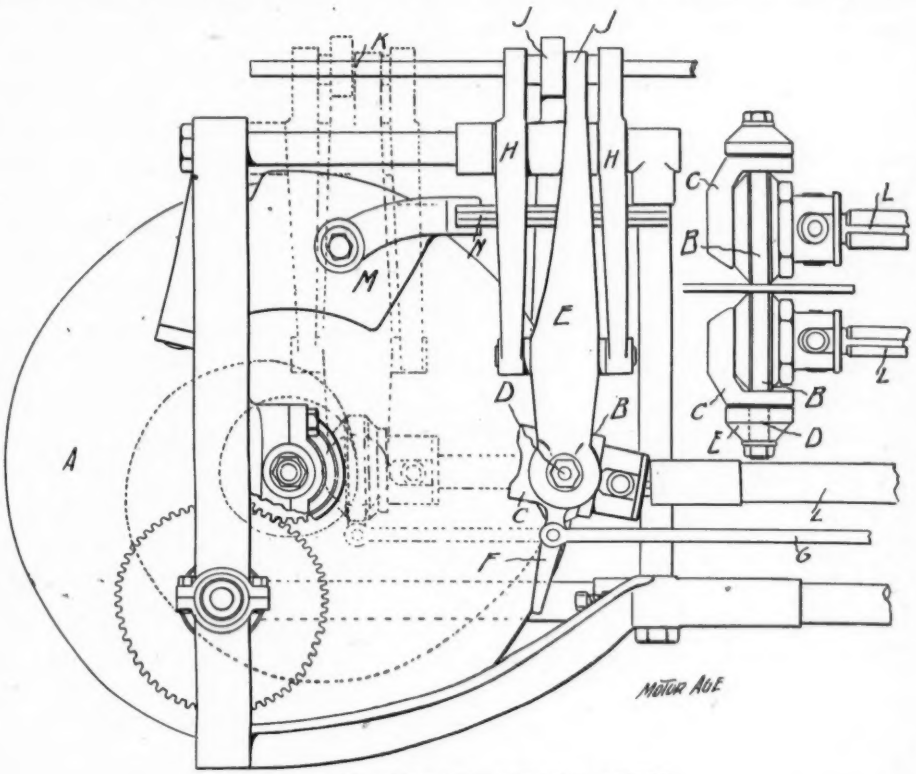


FIG. 1.—COWLE'S TRANSMISSION DEVICE.

The inventor specifies a preferable form of motor connection not here shown, but whereby the two drive rods, L, are connected by spur gears to revolve in unison in opposite directions, and whereby, through the medium of cam operated clutches, either rod may be made to engage the motor shaft clutch directly according as to whether it is desired to

drive the vehicle forward or backward.

The arm, F, is so placed relative to its friction roller, B, and the controlling link, G, so attached that the roller in traveling to and from center of the driving disk follows the lead of the link, G, after the fashion of an ordinary caster-wheel, and when the movement of the link stops from either direction the roller automatically moves into position with its plane of revolution at right angles to a radius of the disk, and remains in this position until the link, G, is again moved.

In a backward movement involving a reverse rotation of the driving gear it would be difficult or impossible to cause the friction roller, B, to traverse to and from the center of the disk on account of the fact that it would lead instead of follow the movement of the link, G, and when this movement stopped would not come into right angular position, but would tend to turn around on its pivot, D. However, in backing it is seldom desirable to utilize any but the slowest speed available. For this reason the arm, F, is extended down and in backing is brought against a stop which brings roller into proper driving position and holds it there during the reverse movement of the gear.

The brake consists of two swinging blocks, M, M, one on each side of the driving disk and each hinged to the rear axle yoke. When brought together they clamp the disk like a vise. Each block or plate is furnished with a friction lining of suitable material. Extending forwardly from each brake block, M, is a horizontal lever arm, H, which engages the inner face of the upper arm of the adjacent lever, E. Thus when the eccentrics are turned in the direction to release the friction rollers and the upper ends of the levers, E, are accordingly drawn together, the brake blocks, M, will be clamped against the driving disk. Notwithstanding that the action of the brake is practically instantaneous, it can never be applied when the friction rollers are in engagement with the disk, and

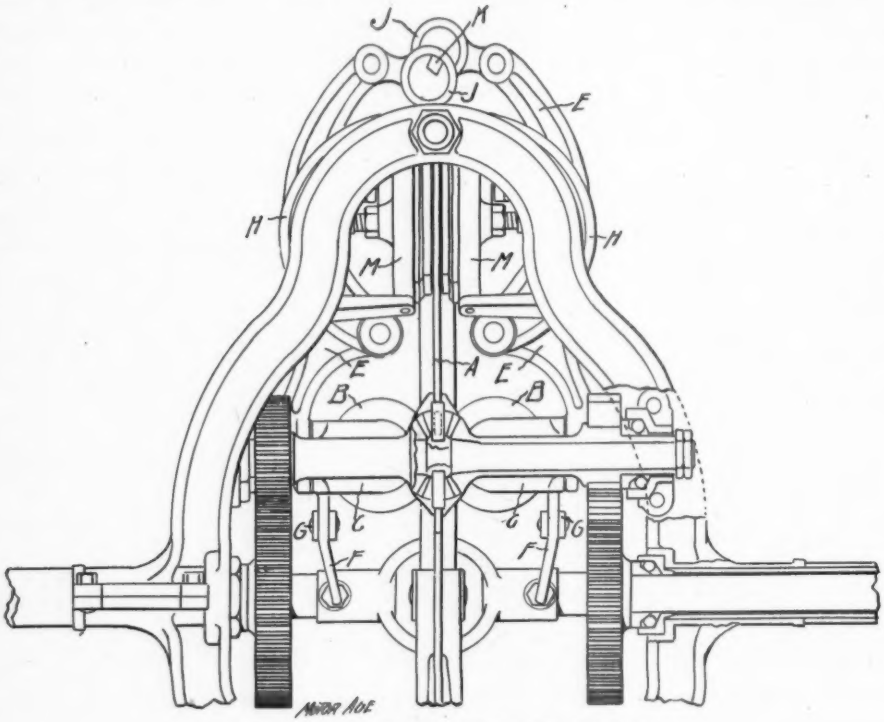


FIG. 2.—COWLE'S TRANSMISSION DEVICE.

neither can the rollers be applied for driving when the brake is on.

The remainder of the invention relates to the arrangement of the controlling levers and mechanism whereby the following effects are obtained in driving the vehicle, all operations being accomplished with a reversing lever and a double movement steering lever:

The initial movement either in stopping or reversing is to traverse the friction wheels, B, from center to circumference of disk, A, reducing the speed, for example, from twenty to five miles per hour, before applying the brake.

Reversing cannot take place until speed is reduced, brake applied and machine stopped.

As above pointed out, brakes cannot be applied when friction rollers are engaged, and vice versa; also the friction wheels cannot be applied except at the periphery of the disk, where they have the greatest leverage to start the machine, and then not when disk is moving in reverse direction.

All the changes are positive, automatic and interlocked, and no change can take place until the previous movement in the order has been completed, making accidents or derangements from carelessness or inexperience on the part of the driver improbable.

When stopped or the brakes applied the motor is practically disconnected from the driving mechanism.

LAWSON'S COOLING FAN

Letters patent No. 654,797, dated July 31, 1900, to Henry J. Lawson, London, Eng.; air fans for cooling exclusive motors.

The invention comprises the attachment of fan blades to the spokes of one of the drive wheels of a vehicle whereby a transverse current of air may be thrown upon the motor, it being specified that the latter is located adjacent to one side of the wheel.

The fan blades in the wheel are supplemented by other blades placed on the periphery of the motor fly-wheel which is upon the opposite side of the drive wheel. The reason for the double fan is that it is customary to keep gasolene motors in operation during temporary stops of the vehicle and that by thus supplying the fly-wheel with fans the motor may be kept cool during such periods as well as when the vehicle is traveling.

It is obvious that the wheel fans are narrow at their inner ends and do not fill the space between the spokes so that the independent current of air produced by the fly wheel fans will readily pass through the wheel to act upon the motor on the opposite side.

LIBBEY'S NOZZLE SCHEME

Letters patent No. 654,742, dated July 31, 1900, to H. W. Libbey, Boston, Mass.; automobile truck.

Mr. Libbey, who is mentioned elsewhere as the inventor of a fifth-wheel steering gear, has now for the third time devised an automobile truck to be driven by compressed or liquefied air or gas. The principle upon which this illusionary truck is supposed to operate is simple. Under the floor of the vehicle is suspended a number of tanks holding a quantity of the compressed or liquefied air. From the tanks run pipes whose ends are furnished with nozzles adapted to discharge streams of the driving medium against vanes arranged water-wheel like upon both sides of the four wheels

FIFTH-WHEEL STEERING GEAR

Letters patent No. 654,741, dated July 31, 1900, to H. W. Libbey, Boston, Mass.; means for attaching motor vehicle body and arrangement of steering mechanism.

In contradistinction to the usual custom, this inventor provides a fifth-wheel for steering purposes. The front axle is turned by means of a chain and sprocket connection between the vertical shaft of the fifth-wheel and an upright bar to which the hand wheel or crank is attached. The remainder of his mildewed invention relates to semi-elliptical springs attached at their arch points to the vehicle body and slidably secured at their ends to the respective wheel axles.

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ELMORE GASOLENE VEHICLE

DESCRIPTION OF A MODERATE-PRICED AND SIMPLE RUNABOUT—A PRACTICAL TWO-CYCLE MOTOR EMPLOYED

The Elmore Mfg. Co. of Clyde, Ohio, has adopted a policy which is radically different from that of the majority of firms in the motor-vehicle business. The features in which their policy differs from that of other manufacturers are those of selling their goods through agents and of making a vehicle listing at a moderate price—$550.

ELMORE GASOLENE VEHICLE—SIDE VIEW.

Of course it could not be expected that for such a price a large and complicated vehicle could be constructed. The Elmore vehicle is not large and is the acme of simplicity.

It is equipped with a two-cycle gasoline engine.

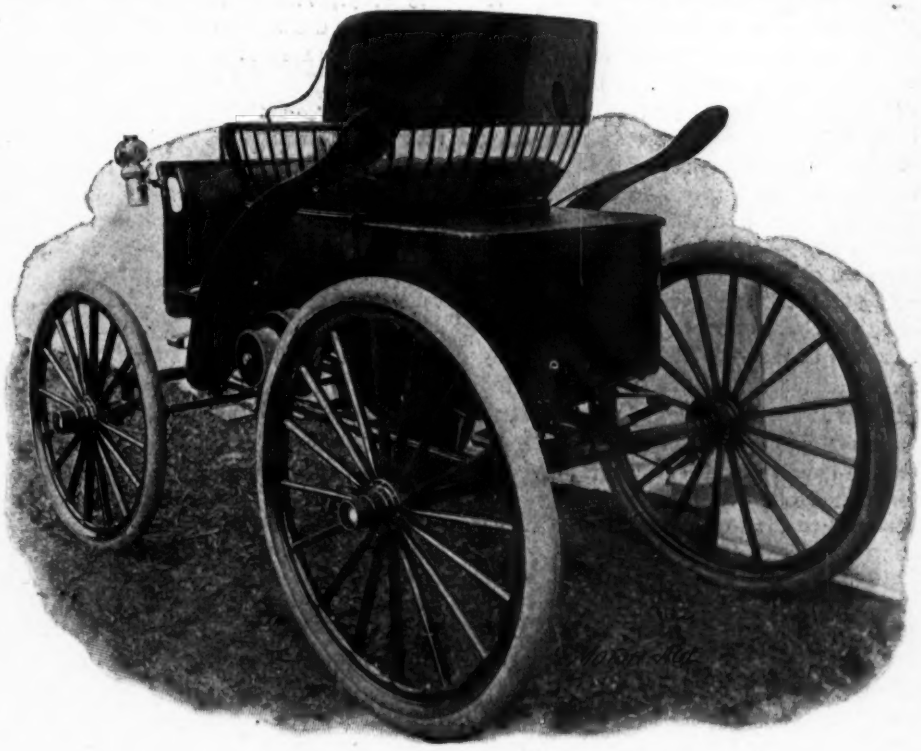
The statement has been frequently heard that a two-cycle engine could never be made to work in a motor carriage. If a ride of more than an hour's duration be any criterion, then the experience of a representative of the Motor Age is that a two-cycle engine can be built that will not only run a motor-vehicle, but that it will run it in a manner that is highly satisfactory, allowing of a wide range of speeds without any change in the transmission gearing, and this when the supply of gasoline in the tank was comparatively small and not fresh—a circumstance which would help to make the running of the engine unsatisfactory, if it were easily affected.

The appearance of the Elmore vehicle can be understood by an inspection of the two accompanying illustrations. The photographs from which these illustrations were made were, however, of the first experimental vehicle that the company turned out. It was found that the

springs were not large enough, and, in the vehicles which are now being turned out, there are two springs in the rear instead of one, and all the springs are larger.

The motor mechanism is simple in the extreme. A single-cylinder, two-cycle motor is pivotally hung from the carriage frame in a vertical position, but, contrary to general custom, with the head of the cylinder at the bottom. The crank-shaft is extended beyond the crank casing and at the two ends are two small friction wheels which are rigidly attached to the shaft. There are two other friction wheels, larger than the ones just described, which are carried on sleeves, splined on either end of the motor shaft. The larger friction wheels are hollow so that they can be slid over the smaller ones. A lever, convenient to the driver's hand, governs the shifting of the larger pair of friction wheels. When the larger wheels are over the smaller ones, giving the appearance of only one pair of wheels, the high or normal speed is conveyed through the friction wheels to the pneumatic tires of the rear traction wheels. When the larger wheels are drawn in toward the body of the vehicle, and the smaller friction wheels are engaged with the tires, the hill-climbing gear is obtained.

The motor, it will be remembered, is pivotally hung to the frame of the vehicle, the pivotal points being at the side of the cylinder. This permits the crank-shaft to have an angular motion, relative to these pivotal points. By means of this construction the friction wheels—on the ends of the crank-shaft—are held in contact with the rear tires or not, at the option of the driver, through a lever in the center of the vehicle, shown in the first illustration. When a change is made from one speed to another, it is necessary to throw the transmission entirely out of contact. It is seldom neces-



ELMORE GASOLENE VEHICLE—REAR VIEW.

sary, however, to use the lower gear, either for starting, varying the speed of the vehicle or even for climbing ordinary grades. The speed of the vehicle is admirably governed through the engine. Even the lowest speeds that are necessary on crowded streets can be obtained quickly and without change from the high gear, and the engine furnishes sufficient power for all ordinary purposes at the same high gear. The low gear is purely for emergencies such as the heaviest of roads and stiffest of grades.

The ignition is of the make-and-break variety. The company attributes much of the success to perfect insulation, effected by lava insulators and the large amount of platinum used in the electrodes of the sparking device, $4 worth of platinum being used on these electrodes.

A centrifugal governor prevents a too high motor speed, and this governor may be adjusted for any desired maximum.

The carbureter is of simple construction and of the vaporization variety. By an ingenious arrangement of ports, the explosive mixture is drawn into the crank chamber without the use of a spring-actuated valve and compressed by the forward stroke of the piston, being then admitted to the explosion chamber of the engine by the opening of a port by the piston, in the manner common to two-cycle engines. The exhaust port is of ample size, much larger than the inlet port, and the fresh mixture is directed toward the head of the cylinder by the usual deflector on the piston head.

The speed of the engine is governed from the lever in the center of the carriage, which is fitted with a slide for shifting the sparking device. This speed can be promptly reduced, be it high or low, by a push button on the steering lever handle, which cuts out the ignition entirely, allowing the engine to act as a brake. In operation the device is very effective.

The rear wheels, being driven direct from the motor-shaft, are rotatably mounted on a non-rotatable axle. This does away with the necessity of any differential gearing. The effect of the tires, which, according to Designer Beard, had been run more than 2,000 miles, was not noticeable. Indeed, they looked as if they had much more than that distance to run before they would show any effects from wear.

A foot lever controls band brakes on the axles of the two rear wheels.

The steering gear is of the ordinary design and is operated by a lever which is vertically hinged to the right hand side of the front axle and is entirely free from the body. The vehicle is so light that it can be drawn about by this steering handle when it is turned down to the front.

The body of the vehicle is made of sheet metal and is hollow, making a U-shaped water tank which surrounds the gasoline tank and batteries, maintaining the former at an approximately constant temperature.

The vehicle is by all odds the simplest that has yet been offered to the public, and, while not designed to meet all purposes, yet admirably fulfills its function of furnishing a neat, inexpensive and reliable gentleman's runabout which will go as fast as the average man will care or dare to travel, and will go over any roads and grades that will be met under anything like ordinary circumstances.

In speaking of the policy that has been adopted by the company, Manager J. W. Becker said:

"We realize that the future success of motor-vehicle manufacturers lies in their agents, and we have determined to secure the best representation that is to be had before the competition becomes too keen. We are selling our vehicle at what is bound to be a popular price, and already have a number of agents who are 'hustlers' and a credit to the firms they represent, as well as to themselves. We have none who are not of this class, nor will we have any other kind in the future.

"We purpose to take care of these good agents in the manner in which they should be taken care of, and will not allow their number to become so large that we cannot take care of them properly.

"No, we will not refuse to sell to indi-

viduals, but we prefer to sell through our agents. To prevent a repetition of the experience we and many other manufacturers have had in the bicycle business, we do not allow an agent any discount on the first vehicle he buys, but sell it to him at list price, making a rebate on the second vehicle. In this manner we prevent being caught by the individual who is looking merely for a single vehicle for his personal use and wants it at a discount. He is a nuisance.

"At the present time we have orders in excess of the capacity of our factory. We are not yet turning out vehicles as rapidly as we would like to, but will be in shape for speedy work in a comparatively short time, when all our tool-making work is completed. As things now are, we are delivering our vehicles as fast as they are turned out of the factory and properly tested."

MOTOR RACING AND MOTOR PACING

ARTHUR ROSS TALKS

New York, Aug. 6.—Arthur Ross, the motor pace follower, who has been racing as a team mate of Harry Elkes abroad, is here on a brief visit before returning to Paris this week to ride in the Bal d'Or 24-hour race at the new Exposition track in September. In a chat with a Motor Age man had several interesting things to say about motor pacing abroad.

"There is no doubt," said he, "that a man can follow a motor pacing tricycle much easier and faster than he can a tandem. For instance, when I was not in training or condition I rode behind one for fifteen miles with ease at the rate of forty-one miles an hour. It is not generally known, by the way, that Taylor's world's record, which Harry Elkes, paced by a tandem, could have beaten at Berkeley Oval last autumn but for the spill in the last half minute of the race, was made behind a tricycle. In fact, all the recent world's paced records have had tricycles for pacemakers.

The best pacing tricycles, however, are controlled by the Clement-Gladiator-Phebus combination, which controls Bauge and Bouhours. The crack one is manned by a 6-foot-4-inch giant named Bertram. This and the fact that there have been numerous accidents behind them, have caused the riders outside the combination mentioned to agree to follow only tandems in paced races under a penalty of 5,000 francs forfeit. These tricycles are almost forty inches wide and have gasolene tanks nearly the whole width. Add this to the giant Bertram, an expert operator at that, and you will see how little chance we outsiders have.

"The races Harry Elkes has ridden show him to be by far the greatest pace follower in the world. His gains in races after accidents have been marvelous. Not only do the foreign writers continue to make excuses for Taylor, but the correspondents of the American papers follow in the same strain. They are touchy about their own men being defeated."

PARIS EXPOSITION RACE

Paris, July 29.—The first of the great trial races of the Paris Exposition was completed yesterday. It was a notable event in many particulars—from the number of entries, the number of the seventy-two actual contestants, the speed and the public interest.

The race was for the usual three classes —voitures or heavy vehicles, voiturettes or light vehicles, and for motocycles, mostly tricycles.

In the voiture class there were twenty-seven entries and nine cash prizes, aggregating $6,000, of which $1,600 went to the first, $1,200 to the second and $1,000 to the third.

In the voiturette class there were four-

teen entries and seven prizes, aggregating $1,800, with $800 for the first.

In the motocycle class there were no less than thirty-five entries and thirteen prizes, aggregating $1,600, with $400 to the first.

A grand total of $9,400 in prizes given by the Exposition for one contest—not so bad, is it?—besides various medals for meritorious performances.

The event was run from Paris to Toulouse by one road and back to Paris by another, a total distance of 1,467 kilometers, or about 915 miles. The fastest time was made by Levegh in his Mors car. He covered the distance in a little less than 26¾ hours, an average of nearly thirty-five miles an hour. For once one of the numerous Panhard & Levassor racers did not carry off first prize.

The race occupied four days, one of which was spent in exhibiting the machines at Toulouse, after the first day's run of 721½ kilometers. The second day's run was 351 kilometers and the third day's 370 kilometers.

Levegh was so far in the lead at the end of the first day, Wednesday—nearly an hour and a half—that, although he was no better than third on either of the succeeding days, he still made the best time for the whole distance in his own voiture class and in all classes as well. His time on Wednesday was 13:13:25, while Teste of the motocycle class was second in 14:42:32, and Giraud of the voiture class third in 14:58:34.

Rene de Knyff started out in the lead and maintained it for a considerable distance, or until he had trouble with his tires, which finally forced him to abandon the contest. Giraud then took the lead and alternated with Voight for a while, until they, too, had tire troubles, when Levegh forged ahead, although he did not entirely escape punctures.

Thursday was devoted to the exhibition at Toulouse.

At the very beginning of the Friday's journey Levegh met with a puncture and was forced to stop and repair it before he could continue. As a result he was third at the finish of the run. Voight was first for the 351 kilometers, in 5:43:49; Pinson second in 6:01:48, and Levegh third in 6:11:01. These were all of the voiture class. In the motocycle class Teste was first in 6:45:55, and in the voiturette class L. Renault was first in 8:47:01.

In Saturday's run of 370 kilometers Pinson secured the fastest time, covering the distance in 6:44:18, while Voight was second in 7:16:26 and Levegh third in 7:19:27. In the motocycle class Fournier was first; Bardin, the Englishman, second, and Teste only third. In the voiturette class L. Renault was again first.

When the total time for the three days was figured up it gave the following results:

In the voiture class Levegh was first in 26:43:53; Voight second in 28:02:07; Pinson third in 28:03:16, and Giraud fourth in 28:46:06. In the motocycle class Teste won in 29:51:55, and in the voiturette class L. Renault in 40:27:40.

MICHAEL DISAPPOINTS SPECTATORS

Bridgeport, Aug. 2.—John A Nelson of Chicago rode ten miles to-day at the Pleasure Beach track before about one thousand people who traveled to the track to see the exhibition only. He did the ten miles in 17:09 2-5 and was awarded the race over Jimmy Michael, who failed to appear and who failed to secure a release from the board of control. Michael and Nelson were matched for twenty-five miles and every indication to-day pointed to an attendance of 6,000 people. Five car loads of suburbanites came to town from New Haven way, several car loads from other directions, and large delegations of club members from all over Connecticut came by wheel. Several of the large factories in the city were compelled to shut down owing to the number of employes who asked for their freedom this afternoon. One factory purchased a block of sixty reserved seats at $1 each. The city was never as interested in a cycle race before, and thousands wanted to see Terry McGovern, who came down this morning to start the race and returned at noon. Referee R. F. Kelsey arrived at noon. He looked carefully into every-

thing and then asked Nelson to ride until stopped, awarding him the race at the finish. Nelson had to release the local management from a $250 guarantee, but the board of control has promised to take up the matter of securing this guarantee from Manager Jim Kennedy or Jimmy Michael, along with a sufficient amount to cover the expenses of the local promoters and of the Nelson outfit from Boston. Nelson brought down his two motor machines and used both to-day.

Michael and his manager tried to withdraw from the race yesterday on the plea that Michael was sick. The board of control refused to listen to this plea after the Boston experience, and ordered Michael to appear. Chairman Batchelder has promised to take up the case at once and act promptly for the good of the sport, the disappointment in this city having injured the sport almost irreparably. The management of the meet refused to give out any information last night in regard to Michael, believing that in view of the demands of the board of control the midget would come and thus avert trouble.

Johnnie Nelson was naturally disappointed He said to-night: "I am now the middle-distance champion, but to gain the title I want to beat Michael twice. I have defended the title which I claimed some time ago against all comers and have eighteen races within forty days. I don't know whether I will ever race Michael again, for he has disappointed me twice by claims of sickness. However, my manager has the arranging of my affairs and he may ask me to ride Michael, when I would probably consent."

MOTOCYCLE RACING AT BOSTON

Boston, Aug. 4.—Johnnie Nelson added another to his string of victories and made it ten straight to-day when he defeated Archie McEachern, Will Stinson and Frank Starbuck on the half-mile very rough dirt track at Combination Park before 8,000 people to-day, going the fifteen miles in 28:01 3-5. The time of McEachern was 29:03 4-5, and of Stinson 39:44 3-5. Starbuck's time was not taken. So it will be seen that Nelson won by a comfortable margin He won ,as a matter of fact, by a half-mile and five yards over Stinson, and more over the others.

In the get-away Stinson led by fifty yards and he increased this to 100 yards. Nelson went away ahead of McEachern and merely held Stinson in sight and waited. In the sixth mile Stinson went to pieces, as Nelson had thought he would. Then Nelson went right after the Cambridge boy and passed him in the sixth mile. McEachern went by on the next mile and went after Nelson, whom he failed to catch. Nelson in turn held his own, but by this time in the lead. In the fourteenth mile McEachern fell when helplessly out of it and Nelson went ahead to a victory by half a mile. Some of the miles were as low as 1:47.

In the one-mile handicap for motor tricycles, voiturettes and quadricycles, Skinner and Henshaw, from scratch, gained first and second in 1:50 1-5, and Harold Brown, also on a tricycle, was third. Skinner later rode a mile exhibition on his new French tricycle in 1:38 4-5.

The half-mile dirt track also saw a three-mile motor tandem race which was a caution. The seven teams started well and Hoyt and Callahan jumped into the lead. They raced the stretches and shut off the power on the turns and their gain increased, while Ruel and Kent made monkeys out of the rest of the field. Hoyt and Callahan averaged 1:34 to the mile, finishing the three miles in 4:43 4-5.

MILLER DEFEATS PIERCE

New York, Aug. 4.—Charles W. Miller, the six-day bicycle champion, defeated Burns Pierce, another six-day notable, in a twenty-five-mile paced race at Manhattan Beach this afternoon. Miller's time was 43:51. Pierce was beaten 150 yards and rode the distance in 43:58 3-5. Miller followed a new motor tandem fresh from the Waltham factory. It had long handle bars, far extended rear seat, and all the latest wrinkles.

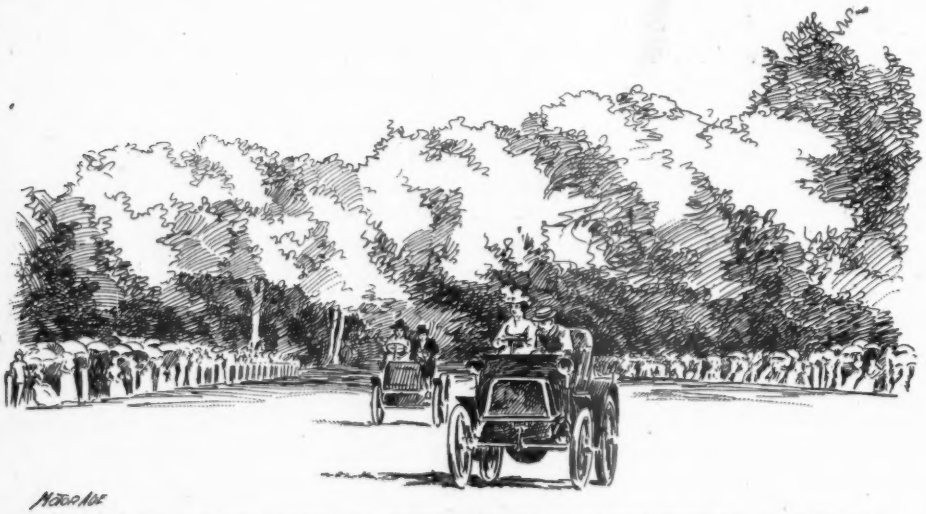
AND NOW IT IS THE AUTOMOBILE GYMKHANA

London, July 28.—A gymkhana is ordinarily an affair at which people who sometimes patronize athletic sports, but who are too indolent to indulge in such with healthy vigor collect themselves for the purpose of engaging in dainty satires on more manly performances. For instance, at a bicycle gymkhana may be seen several pink-cheeked dudes on marvelously clean and shiny cycles chasing each other around the greensward, balancing the while uncooked eggs on the far ends of long spoons. Petticoats and gossip figure largely at gymkhanas.

The entrance of the automobile into fashionable life is apparently destined to elevate the gymkhana a notch or two above its present level of effeminate childishness. The automobile offers more possibilities in the line of fancy and difficult maneuvers than does the bicycle, and to arrange a program of novel automobile events it is not necessary to resort to egg-carrying and parasol skirmishing.

A gymkhana for automobilists was recently held at a fashionable London country resort, and while the events were not as thrilling as the many hair-raising incidents in the last Paris-Bordeaux road race, they possessed an element of skill and professional interest uncharacteristic of the usually puerile gymkhana.

In reality the happening was a test of automobile manipulation. It was a gymkhana because gymkhana patrons surrounded the playground and watched the vehicles and their drivers perform interesting feats. One or two of the events savored of the typical gymkhana. There was a motor-tricycle race in which the contestants (gentlemen, of course) were compelled to partially disrobe while in motion, hang the garments on posts and collect the apparel on the return trip around the course, but even an event of this nature is slightly more edifying to intelligent onlookers than the sight of several frail pink-tea adepts trying to thread needles while riding bicycles hands-off across a croquet ground.



FINISH OF LADIES' RACE AT RECENT ENGLISH MOTOR-VEHICLE GYMKHANA.

The following were some of the most important and interesting events at the automobile gymkhana:

Handicap bending race for motor carriages, 500 yards—Between posts; forward to a line; front wheels to cross

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THIS volume will contain the reproductions of all the drawings of all patents on Motor Vehicles up to July 1, 1899, from which date the weekly U. S. Electrical and Automobile Patents includes them. Not only will every drawing be given, but the nature of the invention, essentials of the specification, the claims in full and a complete index, giving the **List of all References Cited when the Patents were pending as applications, Interferences, parties to them and Decisions**, so that a complete knowledge of this rapidly developing art can be secured.

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The sizes of the pages will be the same as those of the Electrical Weekly or the weekly issues of United States Patents. It will be a digest of about 1,000 patents, including reissues, trade-marks and designs, and the whole will be a volume of about 800 pages. Those desiring the work should subscribe at once as the first copies ready will be sent to previous subscribers.

U. S. Electrical and Automobile Patents.—Published weekly, compiled by James T. Allen, contains all patents for Electrical and Automobile devices as issued. Subscriptions may be made to date from July 1, 1899, thus giving the owner of Allen's Digest of Automobile Patents every patent issued up to date, and kept up to date. Subscription $10 per year, in advance (twenty cents a week).

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line; vehicle to stop and return backward; in returning pass first post on opposite side to that on which it was passed in going forward.

Handicap race, starting motor carriages from "cold," 1,570 yards—For carriages with tube ignition only; tubes and lamps to be sufficiently cold to permit them to be held in hand; driver to start on foot twenty yards to rear of vehicle, run to carriage, light lamps, start engine and race around the full course with flying finish.

Motor carriage handicap race for ladies, 1,570 yards.

Starting and stopping handicap, 250 yards—Start from line; race over straight course; terminate in as short distance as possible over a line.

Obstacle race for motor carriages, 1,570 yards—Between gate posts, dummies, etc., including opening and reclosing of gate and to finish through a paper screen.

Automobile gymkhanas, when properly conducted, develop skill in automobilism as well as furnish diversion; hence they are profitable. Being profitable and much less ludicrous than the social functions from which they take their name, they either deserve another appellation or gymkhana as a generic term will in the future come to possess a different significance than that which it has previously merited.

NEWS OF THE MOTOR INDUSTRY

NEW YORK AUTOMOBILE CO.

New York, Aug. 6.—After three months' test of their gasolene automobiles, the New York Automobile Co., Park Row Building, expects to be able to begin the delivery of some types of vehicles early in October.

The company was organized less than a month ago under the laws of New Jersey. The capital is $200,000, of which $85,000 is said to have been paid in.

The officers are all well known New York business men. Charles G. Bliss, of Westfield, N. J., manager of the New York end of the Northwestern Insurance Co., is president. The vice-president is Edward Rode, of the Rode & Brand lithographing concern, No. 10 Barclay Street. Frank P. Slade, of the law firm of Putney, Bishop & Slade, No. 115 Broadway, is secretary, and George N. Gudewood, New York manager of the Oneida Community, No 413 Broadway, is secretary These, with Dr. Warren, of Brooklyn, constitute the board of directors.

Two factories have been secured by the company. One is located at Elizabeth, N J., and is a two-story and basement brick building 48 by 130 feet, with an L 30 by 50 feet. Here the parts will be made and assembled. A five-story building, 50 by 140 feet, on the corner of Fulton and Columbia Streets, Brooklyn, will be used for completing and finishing the vehicles

A NEW MANUFACTURING CONCERN

Cleveland, Aug. 6.—The National American Cycle Co. of Akron is the latest bicycle manufacturing concern to take up the manufacture of automobiles. It is preparing a portion of its plant for this work and has completed a model vehicle of the gasolene type. A representative of a Boston concern called on the National American people a few days ago to secure quotations on 100 vehicles.

Several of the stockholders of the National American company are also interested in the Akron Bicycle Buggy Co., which has just been incorporated under the laws of West Virginia with a capital stock of $100,000. The company will manufacture buggies, runabouts, and buggies equipped with bicycle wheels and pneumatic tires. A portion of the National American plant will also be de-

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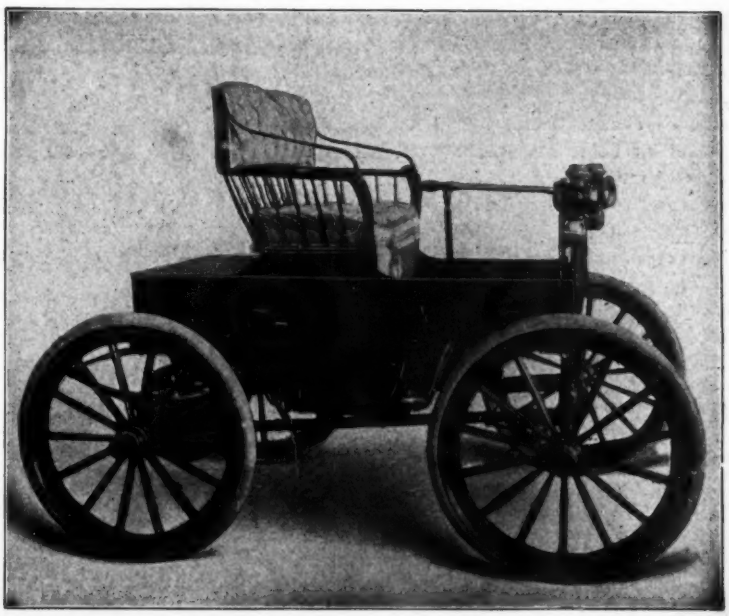

ELGIN AUTOMOBILE CO.

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voted to the work of producing these vehicles.

TO BUILD SOLID RUBBER TIRES

Akron, O., Aug. 6.—The Buckeye Rubber Co., of this city, has recorded a mortgage for $200,000, given to the Colonial Trust Company of New York to secure a bond issue of $200,000. The bonds mature in ten years and draw interest at the rate of six percent. It is provided in the mortgage that $100,000 shall be used for the erection of a new plant at East Akron and the balance of the issue to be held for future additions to the plant.

The Buckeye company was organized some time ago by Samuel Miller, formerly with the Goodyear Tire & Rubber Co., and it is understood that it will manufacture solid tires for the Co-operative Rubber Co., which controls the larger portion of the business in these goods. Heretofore these tires have been made by other Akron concerns.

LOOKING FOR BUSES

Cleveland, Aug. 6.—The Painesville Automobile Co., organized some time ago by prominent Painesville business men to operate an automobile bus line between that town and surrounding villages, is in the market for several vehicles of large passenger carrying capacity. Early last spring the company contracted with a New York concern for a sample vehicle which was to be delivered during June, but after repeated promises of delivery the vehicle seems farther from completion than at the start. The company has decided that the best way out of the matter was to cancel the contract and make another either with the same concern or some other manufacturer. E. L. House, who is interested in a number of Painesville enterprises, is at the head of the company.

PRICES OF ORIENT MOTOR BICYCLES

The Waltham Mfg. Co. of Waltham, Mass., have announced the prices of their motor bicycles, which were illustrated in last week's issue of The Motor Age, as follows: With 1¾-horsepower motors, $250; with 2¼-horsepower motors, $265; with 2¾-horsepower motors, $285; and with 3¼-horsepower motors, $300.

Either Aster or De Dion motors will be fitted, as may be desired. Orders are now being booked for September delivery.

NEED AMERICAN TIRES

A gentleman who is connected with the motor-vehicle business in England writes to the Motor Age that after several days' experience with pneumatic tire repairing on the road and in the blazing sun, he is fully convinced that for heavy cars none of the English-made tires are suitable, and that there is only one made in France that is any good. He thinks that reliable American tires should be well represented in Europe.

MISCELLANEOUS

Advertisements under this head 5 cents per word, cash with order. Express orders, post office orders, or postage stamps accepted.

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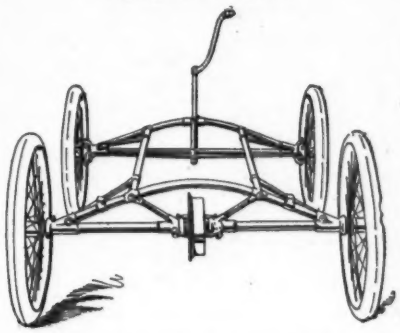

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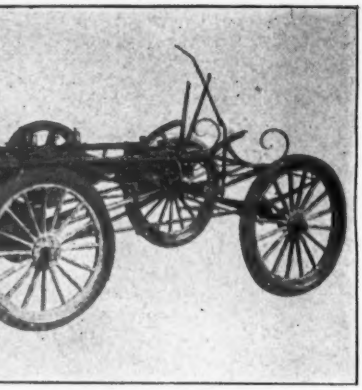

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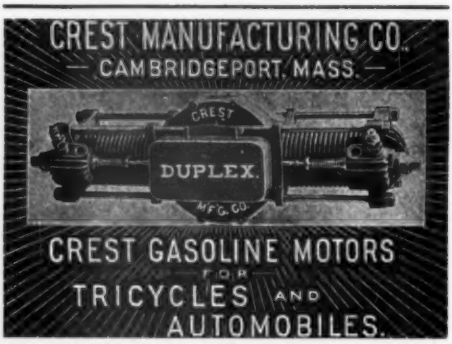

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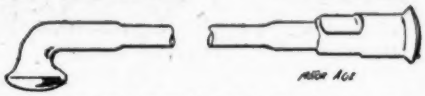

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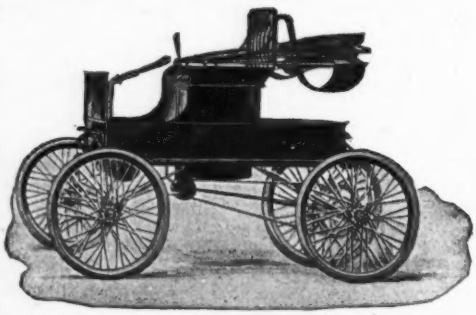

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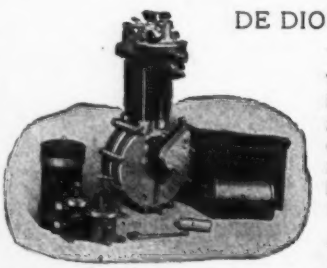

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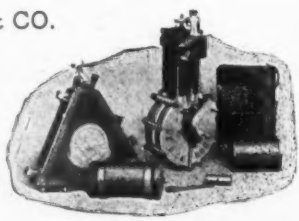

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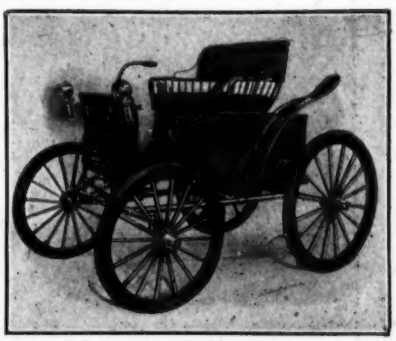

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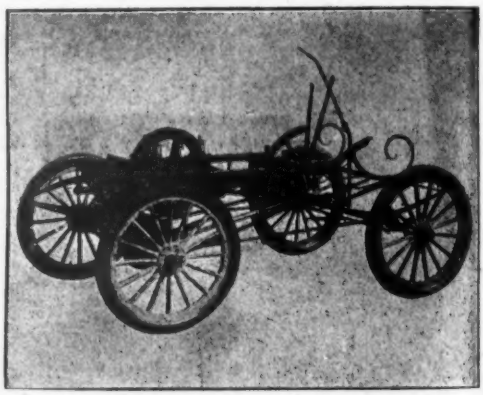

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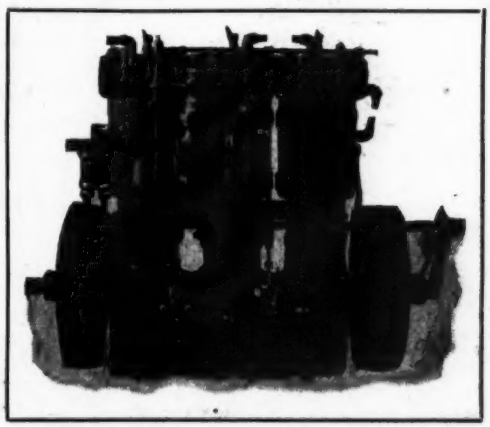

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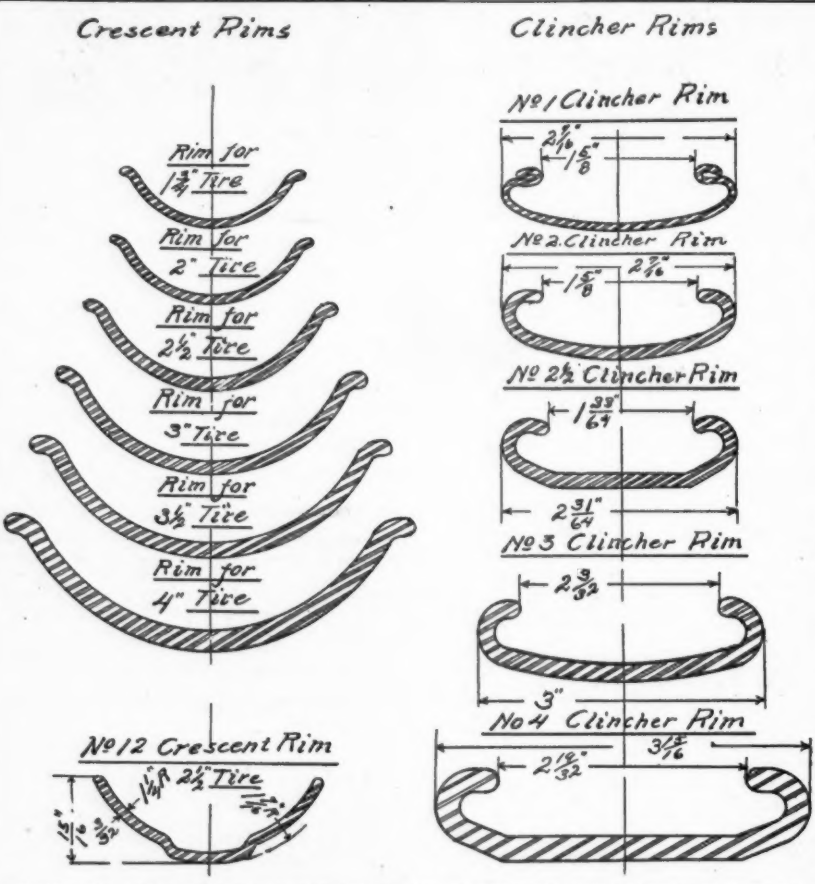

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